using System;

using System.Collections.Generic;

using System.Linq;

using System.Text;

using System.Threading.Tasks;

/// <summary>

/// File name: PTangAssignment3/ProjectC/TimeConversion.cs

///

/// Purpose: Create a C# console application where a user can convert time between seconds, minutes,

/// hours and days. Different projects will have different stubs and integration testing.

///

/// Specifics: Project A will have stubs for ModifyInputStub() and GetMultiplierStub()

/// Project B will have a stub for GetMultiplerStub()

/// Project C will have no stubs

/// PTangAssignment3 will have the full program

///

/// Created by Patrick Tang

///

/// History:

/// March 22, 2017 - Created and finished

/// March 23, 2017 - Added comments

/// </summary>

namespace ProjectC

{

public static class TimeConversion

{

/// <summary>

/// The Convert method will be calculating the total of the value with what the user chooses

/// as the units of conversion.

/// </summary>

/// <param name="value">User input value from the console application</param>

/// <param name="convertFrom">User input the unit that they would like to convert from</param>

/// <param name="convertTo">User input the unit that they would like to convert to</param>

/// <returns>Total value</returns>

public static double Convert(double value, string convertFrom, string convertTo)

{

double total = value \* GetMultiplier(ModifyInput(convertFrom), ModifyInput(convertTo));

return total;

}

/// <summary>

/// The ModifyInput method will convert the string input that the user inputs to a specific return

/// (See Return for more information)

/// </summary>

/// <param name="input">User input from the console application</param>

/// <returns>One of four inputs ("seconds", "minutes", "hours", "days"), or an ArgumentException</returns>

private static string ModifyInput(string input)

{

if (input == "seconds" || input == "Seconds" || input == "s" || input == "S")

{

input = "seconds";

}

else if (input == "minutes" || input == "Minutes" || input == "m" || input == "M")

{

input = "minutes";

}

else if (input == "hours" || input == "Hours" || input == "h" || input == "H")

{

input = "hours";

}

else if (input == "days" || input == "Days" || input == "d" || input == "D")

{

input = "days";

}

else

{

throw new ArgumentException("Incorrect time unit");

}

return input;

}

/// <summary>

/// The GetMultiplier method will do a pre-calculation of what the user input is from the ModifyInput method

/// </summary>

/// <param name="convertFrom">User input the unit that they would like to convert from</param>

/// <param name="convertTo">User input the unit that they would like to convert to</param>

/// <returns>multiplierValue goes to Convert method and replaces the

/// GetMultiplier(ModifyInput(convertFrom), ModifyInput(convertTo))</returns>

private static double GetMultiplier(string convertFrom, string convertTo)

{

double multiplierValue = 0.0;

if (convertFrom == "seconds")

{

if (convertTo == "seconds")

{

multiplierValue = 1.0;

}

else if (convertTo == "minutes")

{

multiplierValue = 1.0 / 60.0;

}

else if (convertTo == "hours")

{

multiplierValue = 1.0 / (60.0 \* 60.0);

}

else if (convertTo == "days")

{

multiplierValue = 1.0 / ((60.0 \* 60.0) \* 24.0);

}

}

else if (convertFrom == "minutes")

{

if (convertTo == "seconds")

{

multiplierValue = 60.0;

}

else if (convertTo == "minutes")

{

multiplierValue = 1.0;

}

else if (convertTo == "hours")

{

multiplierValue = 1.0 / 60.0;

}

else if (convertTo == "days")

{

multiplierValue = 1.0 / (60.0 \* 24.0);

}

}

else if (convertFrom == "hours")

{

if (convertTo == "seconds")

{

multiplierValue = 60.0 \* 60.0;

}

else if (convertTo == "minutes")

{

multiplierValue = 60.0;

}

else if (convertTo == "hours")

{

multiplierValue = 1.0;

}

else if (convertTo == "days")

{

multiplierValue = 24.0;

}

}

else if (convertFrom == "days")

{

if (convertTo == "seconds")

{

multiplierValue = 60.0 \* 60.0 \* 24.0;

}

else if (convertTo == "minutes")

{

multiplierValue = 60.0 \* 24.0;

}

else if (convertTo == "hours")

{

multiplierValue = 24.0;

}

else if (convertTo == "days")

{

multiplierValue = 1.0;

}

}

return multiplierValue;

}

}

}